

107TH CONGRESS
1ST SESSION

S. 478

To establish and expand programs relating to engineering, science, technology,
and mathematics education, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 7, 2001

Mr. ROBERTS (for himself, Mr. KENNEDY, and Mr. BINGAMAN) introduced
the following bill; which was read twice and referred to the Committee
on Health, Education, Labor, and Pensions

A BILL

To establish and expand programs relating to engineering,
science, technology, and mathematics education, and for
other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “Engineering, Science, Technology, and Mathematics
6 Education Enhancement Act” or the “ESTM Act”.

7 (b) TABLE OF CONTENTS.—The table of contents for
8 this Act is as follows:

Sec. 1. Short title; table of contents.

Sec. 2. Findings.

Sec. 3. Assurance of continued local control.

TITLE I—NATIONAL SCIENCE EDUCATION ENHANCEMENT

Sec. 101. Short title.

Sec. 102. Support for mentoring activities for engineering, science, technology and mathematics teachers.

Sec. 103. Expansion of Eisenhower National Clearinghouse.

Sec. 104. Summer Professional Development Institutes.

Sec. 105. Grants for teacher technology training software and instructional materials.

Sec. 106. Reservation for after-school activities.

Sec. 107. After-school science day care at community learning centers.

TITLE II—PROVISIONS RELATING TO THE NATIONAL SCIENCE FOUNDATION

Sec. 201. Master teacher grant program.

Sec. 202. Dissemination of information on required course of study for careers in engineering, science, technology and mathematics education.

Sec. 203. Requirement to conduct study evaluation.

Sec. 204. Teacher technology professional development.

Sec. 205. Engineering, science, technology and mathematics business education conference.

Sec. 206. Grants for distance learning.

Sec. 207. Scholarships to participate in certain research activities.

Sec. 208. Interagency coordination of science education programs.

Sec. 209. Definitions.

TITLE III—OTHER PROVISIONS

Sec. 301. Work-study amendments.

Sec. 302. Study.

Sec. 303. Report to congress.

1 **SEC. 2. FINDINGS.**

2 Congress finds the following:

3 (1) As concluded in the report of the Com-
 4 mittee on Science of the House of Representatives,
 5 “Unlocking Our Future Toward a New National
 6 Science Policy,” which was adopted by the House of
 7 Representatives, the United States must maintain
 8 and improve its preeminent position in science and
 9 technology in order to advance human under-

1 standing of the universe and all it contains, and to
2 improve the lives, health, and freedoms of all people.

3 (2) It is estimated that more than half of the
4 economic growth of the United States today results
5 directly from research and development in science
6 and technology. The most fundamental research is
7 responsible for investigating our perceived universe,
8 to extend our observations to the outer limits of
9 what our minds and methods can achieve, and to
10 seek answers to questions that have never been
11 asked before. Applied research continues the process
12 by applying the answers from basic science to the
13 problems faced by individuals, organizations, and
14 governments in the everyday activities that make our
15 lives more livable. The scientific-technological sector
16 of our economy, which has driven our recent eco-
17 nomic boom and led the United States to the longest
18 period of prosperity in history, is fueled by the work
19 and discoveries of the scientific community.

20 (3) The effectiveness of the United States in
21 maintaining this economic growth will be largely de-
22 termined by the intellectual capital of the United
23 States. Education is critical to developing this re-
24 source.

1 (4) The education program of the United States
2 needs to provide for 3 different kinds of intellectual
3 capital. First, it needs scientists and engineers to
4 continue the research and development that is cen-
5 tral to the economic growth of the United States.
6 Second, it needs technologically proficient workers
7 who are comfortable and capable dealing with the
8 demands of a science-based, high-technology work-
9 place. Last, it needs scientifically literate voters and
10 consumers to make intelligent decisions about public
11 policy.

12 (5) Student performance on the recent Third
13 International Math and Science Study highlights the
14 shortcomings of current K–12 science and mathe-
15 matics education in the United States, particularly
16 when compared to other countries. We must expect
17 more from our Nation’s educators and students if
18 we are to build on the accomplishments of previous
19 generations. New methods of teaching mathematics
20 and science are required, as well as better curricula
21 and improved training of teachers.

22 (6) Science is more than a collection of facts,
23 theories, and results. It is a process of inquiry built
24 upon observations and data that leads to a way of

1 knowing and explaining in logically derived concepts
2 and theories.

3 (7) Students should learn science primarily by
4 doing science. Science education ought to reflect the
5 scientific process and be object-oriented, experiment-
6 centered, and concept-based.

7 (8) Children are naturally curious and inquisi-
8 tive. To successfully tap into these innate qualities,
9 education in science must begin at an early age and
10 continue throughout the entire school experience.

11 (9) Teachers provide the essential connection
12 between students and the content they are learning.
13 High-quality prospective teachers need to be identi-
14 fied and recruited by presenting to them a career
15 that is respected by their peers, is financially and in-
16 tellectually rewarding, and contains sufficient oppor-
17 tunities for advancement.

18 (10) Teachers need to have incentives to remain
19 in the classroom and improve their practice, and
20 training of teachers is essential if the results are to
21 be good. Teachers need to be knowledgeable of their
22 content area, of their curriculum, of up-to-date re-
23 search in teaching and learning, and of techniques
24 that can be used to connect that information to their
25 students in their classroom.

1 **SEC. 3. ASSURANCE OF CONTINUED LOCAL CONTROL.**

2 Nothing in this Act may be construed to authorize
 3 any department, agency, officer, or employee of the United
 4 States to exercise any direction, supervision, or control
 5 over the curriculum, program of instruction, administra-
 6 tion, or personnel of any educational institution or school
 7 system.

8 **TITLE I—NATIONAL SCIENCE**
 9 **EDUCATION ENHANCEMENT**

10 **SEC. 101. SHORT TITLE.**

11 This title may be cited as the “National Science Edu-
 12 cation Enhancement Act”.

13 **SEC. 102. SUPPORT FOR MENTORING ACTIVITIES FOR EN-**
 14 **GINEERING, SCIENCE, TECHNOLOGY AND**
 15 **MATHEMATICS TEACHERS.**

16 (a) IMPROVING BASIC PROGRAMS OPERATED BY
 17 LOCAL EDUCATIONAL AGENCIES THROUGH PROFES-
 18 SIONAL DEVELOPMENT.—Section 1119(b)(1) of the Ele-
 19 mentary and Secondary Education Act of 1965 (20 U.S.C.
 20 6301(b)(1)) is amended—

21 (1) by striking “and” at the end of subpara-
 22 graph (D);

23 (2) by striking the period at the end of sub-
 24 paragraph (E) and inserting “; and”; and

25 (3) by adding at the end the following:

1 “(F) include mentoring programs focusing
 2 on changing engineering, science, technology
 3 and mathematics teacher behaviors and prac-
 4 tices to help novice teachers develop and gain
 5 confidence in their skills, to increase the likeli-
 6 hood that they will continue in the teaching
 7 profession, and generally to improve the quality
 8 of their teaching.”.

9 (b) DISSEMINATION OF MENTORING INFORMATION
 10 BY EISENHOWER NATIONAL CLEARINGHOUSE.—Section
 11 2102(a)(3)(C) of the Elementary and Secondary Edu-
 12 cation Act of 1965 (20 U.S.C. 6622(a)(3)(C)) is amended
 13 by striking “materials” and inserting “materials, includ-
 14 ing information on model engineering, science, technology
 15 and mathematics teacher mentoring programs,”.

16 (c) EISENHOWER PROFESSIONAL DEVELOPMENT
 17 PROGRAM STATE APPLICATIONS.—Section 2205(b)(2) of
 18 the Elementary and Secondary Education Act of 1965 (20
 19 U.S.C. 6645(b)(2)) is amended—

20 (1) by striking “and” at the end of subpara-
 21 graph (N);

22 (2) by striking the period at the end of sub-
 23 paragraph (O) and inserting “; and”; and

24 (3) by adding at the end the following:

1 “(P) describe how the State will administer
 2 a mentoring system to ensure consistent imple-
 3 mentation of mentoring programs for engineer-
 4 ing, science, technology and mathematics teach-
 5 ers, provide a structure for local mentoring pro-
 6 gram evaluation, provide technical assistance to
 7 local mentoring programs, ensure compliance by
 8 local mentoring programs with State teacher
 9 training requirements, and provide incentives
 10 for local educational agencies to take mentoring
 11 into consideration in assessing instructional
 12 staff hiring needs.”.

13 (d) EISENHOWER PROFESSIONAL DEVELOPMENT
 14 PROGRAM LOCAL ACTIVITIES.—Section 2210(b)(2) of the
 15 Elementary and Secondary Education Act of 1965 (20
 16 U.S.C. 6650(b)(2)) is amended—

17 (1) by striking “and” at the end of subpara-
 18 graph (D);

19 (2) by striking the period at the end of sub-
 20 paragraph (E) and inserting “; and”; and

21 (3) by adding at the end the following:

22 “(F) include mentoring programs focusing
 23 on changing engineering, science, technology
 24 and mathematics teacher behaviors and prac-
 25 tices to help novice teachers develop and gain

1 confidence in their skills, to increase the likeli-
 2 hood that they will continue in the teaching
 3 profession, and generally to improve the quality
 4 of their teaching.”.

5 (e) ACCOUNTABILITY.—Section 2401(a) of the Ele-
 6 mentary and Secondary Education Act of 1965 (20 U.S.C.
 7 6701(a)) is amended by striking “part.” and inserting
 8 “part, including the impact of State and local mentoring
 9 programs on teaching quality and teacher retention
 10 rates.”.

11 **SEC. 103. EXPANSION OF EISENHOWER NATIONAL CLEAR-**
 12 **INGHOUSE.**

13 (a) ALLOCATION OF APPROPRIATED AMOUNTS.—
 14 Section 2003(b)(1) of the Elementary and Secondary
 15 Education Act of 1965 (20 U.S.C. 6603(b)(1)) is amended
 16 by striking “2103;” and inserting “2103, and
 17 \$10,000,000 shall be available to carry out subparagraphs
 18 (A), (F), and (G) of section 2102(b)(3);”.

19 (b) USE OF FUNDS.—Section 2102(b)(3) of the Ele-
 20 mentary and Secondary Education Act of 1965 (20 U.S.C.
 21 6622(b)(3)) is amended—

22 (1) in subparagraph (A), by striking “(includ-
 23 ing, to the extent practicable,” and inserting “(in-
 24 cluding”;

1 (2) in subparagraph (E), by striking “and” at
2 the end;

3 (3) by amending subparagraph (F) to read as
4 follows:

5 “(F) solicit and gather (in consultation
6 with the Department, national teacher associa-
7 tions, professional associations, and other re-
8 viewers and developers of educational materials
9 and programs) all qualitative and evaluative
10 materials and all programs, including full text
11 and graphics, for the Clearinghouse, review the
12 evaluation of the materials and programs, rank
13 the effectiveness of the materials and programs
14 on the basis of the evaluations, and distribute
15 the results of the reviews (in a short, standard-
16 ized, and electronic format that contains elec-
17 tronic links to an electronic version of the origi-
18 nal qualitative and evaluative materials), ex-
19 cerpts of the materials and links to Internet-
20 based sites, and information regarding on-line
21 communities of users to teachers in an easily
22 accessible manner, except that nothing in this
23 subparagraph shall be construed to permit the
24 Clearinghouse to directly conduct an evaluation
25 of the materials or programs; and”;

1 (4) by adding at the end the following:

2 “(G) develop and establish an Internet-
3 based site offering a search mechanism to assist
4 site visitors in identifying information available
5 through the Clearinghouse on engineering,
6 science, technology and mathematics education
7 instructional materials and programs, including
8 electronic links to information on classroom
9 demonstrations and experiments, teachers who
10 have used materials or participated in pro-
11 grams, vendors, curricula, and textbooks.”.

12 (c) CLEARINGHOUSE.—Section 2102(b) of the Ele-
13 mentary and Secondary Education Act of 1965 (20 U.S.C.
14 6622(b)) is amended by adding at the end the following:

15 “(9) EFFECTIVE USE OF TECHNOLOGY.—In re-
16 viewing evaluations of materials and programs under
17 this subsection the Clearinghouse shall give par-
18 ticular attention to the effective use of materials and
19 technology in engineering, science, technology and
20 mathematics education.”.

21 (d) REPORT.—Not later than two years after the date
22 of the enactment of this Act, the National Academy of
23 Sciences, in conjunction with appropriate related associa-
24 tions and organizations, shall—

1 (1) conduct a study on the Eisenhower National
 2 Clearinghouse and whether the provisions enacted in
 3 the amendments made by this section have resulted
 4 in the Clearinghouse becoming a more effective enti-
 5 ty; and

6 (2) submit to Congress a report on the study,
 7 including any recommendations of the Academy re-
 8 garding the Clearinghouse.

9 **SEC. 104. SUMMER PROFESSIONAL DEVELOPMENT INSTI-**
 10 **TUTES.**

11 (a) IN GENERAL.—Section 2211 of the Elementary
 12 and Secondary Education Act of 1965 (20 U.S.C. 6651)
 13 is amended by adding at the end the following:

14 “(d) SUMMER PROFESSIONAL DEVELOPMENT INSTI-
 15 TUTES FOR TEACHERS.—

16 “(1) PROGRAM AUTHORIZED.—From amounts
 17 made available to carry out this subsection, the Sec-
 18 retary is authorized to make grants to State agen-
 19 cies for higher education, working in conjunction
 20 with the State educational agency (if such agencies
 21 are separate), for activities described in paragraph
 22 (3). Such grants shall be awarded on a competitive
 23 basis that includes a peer review of the grant appli-
 24 cations.

1 “(2) SUBGRANTS.—A recipient of a grant
 2 under paragraph (1) shall carry out the activities de-
 3 scribed in paragraph (3) by making subgrants to, or
 4 entering into contracts or cooperative agreements
 5 with, institutions of higher education, and nonprofit
 6 organizations of demonstrated effectiveness, includ-
 7 ing museums and educational partnership organiza-
 8 tions, which must work in conjunction with a local
 9 educational agency, consortium of local educational
 10 agencies, or schools.

11 “(3) ALLOWABLE ACTIVITIES.—

12 “(A) IN GENERAL.—Each recipient of
 13 funds under paragraph (2) shall use the funds
 14 for the following:

15 “(i) The establishment and operation
 16 of engineering, science, technology and
 17 mathematics summer institutes that pro-
 18 vide professional development to elemen-
 19 tary and secondary school teachers. Such
 20 institutes shall be content-based, build on
 21 school year curricula, and focus only sec-
 22 ondarily on pedagogy.

23 “(ii) To provide teachers with travel
 24 expense reimbursement, a stipend, or class-

1 room materials related to such an insti-
 2 tute.

3 “(iii) The establishment of a mecha-
 4 nism to provide supplemental assistance
 5 and follow up training during the school
 6 year for summer institute graduates.

7 “(B) REQUIREMENTS FOR CURRICULA.—
 8 The curricula referred to in subparagraph
 9 (A)(i) shall be object-centered, experiment-ori-
 10 ented, content-based, and grounded in current
 11 research.

12 “(C) REQUIREMENTS FOR INSTITUTES.—
 13 The summer institutes referred to in subpara-
 14 graph (A)(i)—

15 “(i) shall be conducted during a pe-
 16 riod of a minimum of two weeks;

17 “(ii) shall provide for direct inter-
 18 action between students and faculty;

19 “(iii) shall have a component that in-
 20 cludes use of the Internet; and

21 “(iv) shall provide for follow-up train-
 22 ing in the classroom during the academic
 23 year for a period of a minimum of three
 24 days, which shall not be required to be
 25 consecutive, except that—

1 “(I) if the program at the sum-
 2 mer institute is for a period of only
 3 two weeks, the follow-up training shall
 4 be for a period of more than 3 days;
 5 and

6 “(II) for teachers in rural school
 7 districts, follow-up training through
 8 the Internet may be used.

9 “(4) REVIEW OF APPLICATIONS BY NATIONAL
 10 SCIENCE FOUNDATION.—The Secretary shall provide
 11 each application for a grant under this subsection to
 12 the Director of the National Science Foundation in
 13 order that such applications may undergo the peer-
 14 review process described in paragraph (5)(B), and
 15 shall implement the recommendations of the Direc-
 16 tor in awarding grants under this subsection.

17 “(5) REQUIREMENTS ON NATIONAL SCIENCE
 18 FOUNDATION.—

19 “(A) IN GENERAL.—Each year, not later
 20 than 6 months before the application deadline
 21 for a subgrant, contract, or cooperative agree-
 22 ment described in paragraph (2), the Director
 23 of the National Science Foundation shall de-
 24 velop a structure for the summer institutes sup-
 25 ported under this subsection. Such applications

1 shall address how funds will be used in accord-
 2 ance with the structure developed by the Direc-
 3 tor.

4 “(B) APPLICATION PEER-REVIEW PROC-
 5 ESS.—The Director—

6 “(i) shall establish a peer-review proc-
 7 ess for applications for grants received
 8 under this subsection; and

9 “(ii) shall forward the applications se-
 10 lected by the Director through such proc-
 11 ess to the Secretary.

12 “(C) PRIORITY.—In making awards under
 13 paragraph (2)(A), a grant recipient shall give
 14 priority to applicants whose application includes
 15 an assurance that the applicant will use a cur-
 16 riculum that is three or four weeks in length.

17 “(6) OTHER REQUIREMENTS.—Paragraphs (2),
 18 (3), and (4) of subsection (a), and subsection (c),
 19 shall apply to recipients of funds under this sub-
 20 section in the same manner as such provisions apply
 21 to recipients of funds under subsection (a)(1).

22 “(7) CREDIT FOR PARTICIPATION.—Participa-
 23 tion in an institute supported under this subsection
 24 shall earn credit toward—

1 “(A) State continuing education require-
2 ments for teachers; or

3 “(B) a post-baccalaureate degree program
4 at an institution of higher education.”.

5 (b) FUNDING.—

6 (1) ALLOCATION OF APPROPRIATED
7 AMOUNTS.—Section 2003(b)(2) of the Elementary
8 and Secondary Education Act of 1965 (20 U.S.C.
9 6603(b)(2)) is amended by striking “B;” and insert-
10 ing “B, of which \$100,000,000, \$150,000,000,
11 \$200,000,000, and \$200,000,000 shall be available
12 to carry out section 2211(d) for fiscal years 2002,
13 2003, 2004, and 2005, respectively;”.

14 (2) RESERVATION OF FUNDS.—Section 2202(a)
15 of the Elementary and Secondary Education Act of
16 1965 (20 U.S.C. 6642(a)) is amended—

17 (A) in paragraph (1), by striking “and”;

18 (B) in paragraph (2), by striking the pe-
19 riod at the end and inserting “; and”; and

20 (C) by adding at the end the following:

21 “(3) the amount made available under section
22 2003(b)(2) to carry out section 2211(d).”.

1 **SEC. 105. GRANTS FOR TEACHER TECHNOLOGY TRAINING**
 2 **SOFTWARE AND INSTRUCTIONAL MATERIALS.**

3 Section 3134 of the Elementary and Secondary Edu-
 4 cation Act of 1965 (20 U.S.C. 6844) is amended—

5 (1) in paragraph (5), by striking “and” at the
 6 end;

7 (2) in paragraph (6), by striking the period at
 8 the end and inserting “; and”; and

9 (3) by adding at the end the following:

10 “(7) providing technology training software and
 11 instructional materials to teachers.”.

12 **SEC. 106. RESERVATION FOR AFTER-SCHOOL ACTIVITIES.**

13 Section 10904(a) of the Elementary and Secondary
 14 Education Act of 1965 (20 U.S.C. 8244) is amended—

15 (1) by striking “and” after the semicolon in
 16 paragraph (2);

17 (2) by striking the period at the end of para-
 18 graph (3) and inserting “; and”; and

19 (3) by adding at the end the following:

20 “(4) an assurance that if awarded a grant
 21 under this part, the grant recipient shall use not less
 22 than 5 percent of the amount received to provide
 23 after-school day care services that focus on science
 24 activities.”.

1 **SEC. 107. AFTER-SCHOOL SCIENCE DAY CARE AT COMMU-**
 2 **NITY LEARNING CENTERS.**

3 Section 10905(3) of the Elementary and Secondary
 4 Education Act of 1965 (20 U.S.C. 8245(3)) is amended
 5 by striking “services.” and inserting “services, including
 6 after-school day care services that focus on science activi-
 7 ties for children in grades kindergarten through the sixth
 8 grade.”.

9 **TITLE II—PROVISIONS RELAT-**
 10 **ING TO THE NATIONAL**
 11 **SCIENCE FOUNDATION**

12 **SEC. 201. MASTER TEACHER GRANT PROGRAM.**

13 (a) PROGRAM AUTHORIZED.—The Director of the
 14 National Science Foundation shall conduct a grant pro-
 15 gram to make grants to a State or local educational agen-
 16 cy, an elementary or middle school, or a consortium of
 17 any combination of those entities, for the purpose of hiring
 18 a master teacher.

19 (b) ELIGIBILITY.—In order to be eligible to receive
 20 a grant under this subsection, a State or local educational
 21 agency, elementary or middle school, or consortium de-
 22 scribed in subsection (a) shall submit to the Director a
 23 description of the relationship the master teacher will have
 24 vis-a-vis other administrative and managerial staff and the
 25 State and local educational agency, the ratio of master
 26 teachers to other teachers, and the requirements for a

1 master teacher of the State or local educational agency
 2 or school, including certification requirements and job re-
 3 sponsibilities of the master teacher. The description of job
 4 responsibilities must include a discussion of any responsi-
 5 bility the master teacher will have for—

6 (1) development or implementation of engineer-
 7 ing, science, technology or mathematics curricula;

8 (2) in-classroom assistance;

9 (3) authority over hands-on inquiry materials,
 10 equipment, and supplies;

11 (4) mentoring other teachers or fulfilling any
 12 leadership role; and

13 (5) professional development, including training
 14 other master teachers or other teachers, or devel-
 15 oping or implementing professional development pro-
 16 grams.

17 (c) ASSESSMENT OF EFFECTIVENESS.—The Director
 18 shall assess the effectiveness of activities carried out under
 19 this section.

20 (d) FUNDS.—

21 (1) SOURCE.—Grants shall be made under this
 22 section out of funds available for the National
 23 Science Foundation for education and human re-
 24 sources activities.

1 (2) AUTHORIZATION.—There are authorized to
 2 be appropriated to the National Science Foundation
 3 to carry out this section \$50,000,000 for each of fis-
 4 cal years 2002 through 2004.

5 **SEC. 202. DISSEMINATION OF INFORMATION ON REQUIRED**
 6 **COURSE OF STUDY FOR CAREERS IN ENGI-**
 7 **NEERING, SCIENCE, TECHNOLOGY AND**
 8 **MATHEMATICS EDUCATION.**

9 (a) IN GENERAL.—The Director of the National
 10 Science Foundation shall, jointly with the Secretary of
 11 Education, compile and disseminate information (includ-
 12 ing through outreach, school counselor education, and vis-
 13 iting speakers) regarding—

14 (1) typical standard prerequisites for middle
 15 school and high school students who seek to enter a
 16 course of study at an institution of higher education
 17 in engineering, science, technology or mathematics
 18 education for purposes of teaching in an elementary
 19 or secondary school; and

20 (2) the licensing requirements in each State for
 21 engineering, science, technology or mathematics ele-
 22 mentary or secondary school teachers.

23 (b) AUTHORIZATION OF APPROPRIATIONS.—There
 24 are authorized to be appropriated for the National Science

1 Foundation to carry out this section \$5,000,000 for each
2 of fiscal years 2002 through 2004.

3 **SEC. 203. REQUIREMENT TO CONDUCT STUDY EVALUA-**
4 **TION.**

5 (a) STUDY REQUIRED.—The Director of the National
6 Science Foundation shall enter into an agreement with the
7 National Academies of Sciences and Engineering under
8 which the Academies shall review existing studies on the
9 effectiveness of technology in the classroom on learning
10 and student performance, using various measures of learn-
11 ing and teaching outcome including standardized tests of
12 student achievement, and explore the feasibility of one or
13 more methodological frameworks to be used in evaluations
14 of technologies that have different purposes and are used
15 by schools and school systems with diverse educational
16 goals. The study evaluation shall include, to the extent
17 available, information on the type of technology used in
18 each classroom, the reason that such technology works,
19 and the teacher training that is conducted in conjunction
20 with the technology.

21 (b) DEADLINE FOR COMPLETION.—The study eval-
22 uation required by subsection (a) shall be completed not
23 later than one year after the date of the enactment of this
24 Act.

1 (c) DEFINITION OF TECHNOLOGY.—In this section,
 2 the term “technology” has the meaning given that term
 3 in section 3113(11) of the Elementary and Secondary
 4 Education Act of 1965 (20 U.S.C. 6813(11)).

5 (d) AUTHORIZATION OF APPROPRIATIONS.—There
 6 are authorized to be appropriated to the National Science
 7 Foundation for the purpose of conducting the study eval-
 8 uation required by subsection (a), \$600,000.

9 **SEC. 204. TEACHER TECHNOLOGY PROFESSIONAL DEVEL-**
 10 **OPMENT.**

11 (a) IN GENERAL.—The Director of the National
 12 Science Foundation shall establish a grant program under
 13 which grants may be made to a State or local educational
 14 agency, an elementary or middle school, or a consortium
 15 consisting of any combination of those entities for instruc-
 16 tion of teachers for grades kindergarten through the 12th
 17 grade on the use of information technology in the class-
 18 room. Grants awarded under this section shall be used for
 19 training teachers to use—

20 (1) classroom technology, including hardware,
 21 software, communications technologies, and labora-
 22 tory equipment; or

23 (2) specific technology for engineering, science,
 24 technology or mathematics instruction, including

1 data acquisition, modeling, visualization, simulation,
 2 and numerical analysis.

3 (b) AUTHORIZATION OF APPROPRIATIONS.—There
 4 are authorized to be appropriated for the National Science
 5 Foundation to carry out this section \$10,000,000 for each
 6 of fiscal years 2002 through 2004.

7 **SEC. 205. ENGINEERING, SCIENCE, TECHNOLOGY AND**
 8 **MATHEMATICS BUSINESS EDUCATION CON-**
 9 **ERENCE.**

10 (a) IN GENERAL.—Not later than 180 days after the
 11 date of the enactment of this Act, the Director of the Na-
 12 tional Science Foundation shall convene the first of an an-
 13 nual 3- to 5-day conference for kindergarten through the
 14 12th grade engineering, science, technology and mathe-
 15 matics education stakeholders, including—

16 (1) representatives from Federal, State, and
 17 local governments, private industries, private busi-
 18 nesses, and professional organizations;

19 (2) educators;

20 (3) engineering, science, technology and mathe-
 21 matics educational resource providers;

22 (4) students; and

23 (5) any other stakeholders the Director deter-
 24 mines would provide useful participation in the con-
 25 ference.

1 (b) PURPOSES.—The purposes of the conference con-
2 vened under subsection (a) shall be to—

3 (1) identify and gather information on existing
4 engineering, science, technology and mathematics
5 education programs and resource providers, includ-
6 ing information on distribution, partners, cost as-
7 sessment, and derivation;

8 (2) determine the extent of any existing coordi-
9 nation between providers of curricular activities, ini-
10 tiatives, and units; and

11 (3) identify the common goals and differences
12 among the participants at the conference.

13 (c) REPORT AND PUBLICATION.—At the conclusion
14 of the conference the Director of the National Science
15 Foundation shall—

16 (1) transmit to the Committee on Science of the
17 House of Representatives and to the Committee on
18 Commerce, Science, and Transportation of the Sen-
19 ate a report on the outcome and conclusions of the
20 conference, including an inventory of curricular ac-
21 tivities, initiatives, and units, the content of the con-
22 ference, and strategies developed that will support
23 partnerships and leverage resources; and

24 (2) ensure that a similar report is published
25 and distributed as widely as possible to stakeholders

1 in engineering, science, technology and mathematics
2 education.

3 (d) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated for the National Science
5 Foundation to carry out this section—

6 (1) \$300,000 for fiscal year 2002; and

7 (2) \$200,000 for each of fiscal years 2003 and
8 2004.

9 **SEC. 206. GRANTS FOR DISTANCE LEARNING.**

10 (a) IN GENERAL.—The Director of the National
11 Science Foundation may make competitive, merit-based
12 awards to develop partnerships for distance learning of en-
13 gineering, science, technology and mathematics education
14 to a State or local educational agency or to an elementary,
15 middle, or secondary school, under any grant program ad-
16 ministered by the Director using funds appropriated to the
17 National Science Foundation for activities in which dis-
18 tance learning is integrated into the education process in
19 grades kindergarten through the 12th grade.

20 (b) AUTHORIZATION OF APPROPRIATIONS.—There
21 are authorized to be appropriated for the National Science
22 Foundation to carry out this section \$5,000,000 for each
23 of fiscal years 2002 through 2004.

1 **SEC. 207. SCHOLARSHIPS TO PARTICIPATE IN CERTAIN RE-**
2 **SEARCH ACTIVITIES.**

3 (a) IN GENERAL.—The President, acting through the
4 National Science Foundation, shall provide scholarships to
5 teachers at public schools in grades kindergarten through
6 the 12th grade in order that such teachers may participate
7 in research programs conducted at private entities or Fed-
8 eral or State government agencies. The purpose of such
9 scholarships shall be to provide teachers with an oppor-
10 tunity to expand their knowledge of engineering, science,
11 technology, mathematics and research techniques.

12 (b) REQUIREMENTS.—In order to be eligible to re-
13 ceive a scholarship under this section, a teacher described
14 in subsection (a) shall be required to develop, in conjunc-
15 tion with the private entity or government agency at which
16 the teacher will be participating in a research program,
17 a proposal to be submitted to the President describing the
18 types of research activities involved.

19 (c) PERIOD OF PROGRAM.—Participation in a re-
20 search program in accordance with this section may be
21 for a period of one academic year or two sequential sum-
22 mers.

23 (d) USE OF FUNDS.—The Director may only use
24 funds for purposes of this section for salaries of scholar-
25 ship recipients, administrative expenses (including infor-
26 mation dissemination, direct mailing, advertising, and di-

1 rect staff costs for coordination and accounting services),
 2 expenses for conducting an orientation program, reloca-
 3 tion expenses, and the expenses of conducting final selec-
 4 tion interviews.

5 (e) AUTHORIZATION OF APPROPRIATIONS.—There
 6 are authorized to be appropriated for the National Science
 7 Foundation to carry out this section \$5,000,000 for each
 8 of fiscal years 2002 through 2004.

9 **SEC. 208. INTERAGENCY COORDINATION OF SCIENCE EDU-**
 10 **CATION PROGRAMS.**

11 (a) INTERAGENCY COORDINATION COMMITTEE.—

12 (1) ESTABLISHMENT.—The Director of the Of-
 13 fice of Science and Technology Policy shall establish
 14 an interagency committee to coordinate Federal pro-
 15 grams in support of science and mathematics edu-
 16 cation at the elementary and secondary level.

17 (2) MEMBERSHIP.—The membership of the
 18 committee shall consist of the heads, or designees, of
 19 the National Science Foundation, the Department of
 20 Energy, the National Aeronautics and Space Admin-
 21 istration, the Department of Education, and other
 22 Federal departments and agencies that have pro-
 23 grams directed toward support of elementary and
 24 secondary science and mathematics education.

25 (3) FUNCTIONS.—The committee shall—

1 (A) prepare a catalog of Federal research,
 2 development, demonstration and other pro-
 3 grams designed to improve elementary and sec-
 4 ondary science or mathematics education, in-
 5 cluding for each program a summary of its
 6 goals and the kinds of activities supported, a
 7 summary of accomplishments (including evi-
 8 dence of effectiveness in improving student
 9 learning), the funding level, and, for grant pro-
 10 grams, the eligibility requirements and the se-
 11 lection process for awards;

12 (B) review the programs identified under
 13 subparagraph (A) in order to—

14 (i) determine the relative funding lev-
 15 els among support for—

16 (I) teacher professional develop-
 17 ment;

18 (II) curricular materials;

19 (III) improved classroom teach-
 20 ing practices;

21 (IV) applications of computers
 22 and related information technologies;
 23 and

24 (V) other major categories of ac-
 25 tivities;

1 (ii) assess whether the balance among
2 kinds of activities as determined under
3 clause (i) is appropriate and whether un-
4 necessary duplication or overlap among
5 programs exists;

6 (iii) assess the degree to which the
7 programs assist the efforts of State and
8 local school systems to implement stand-
9 ards-based reform of science and mathe-
10 matics education, and group the programs
11 in the categories of high, moderate, and
12 low relevance for assisting standards-based
13 reform;

14 (iv) for grant programs, identify ways
15 to simplify the application procedures and
16 requirements and to achieve greater con-
17 formity among the procedures and require-
18 ments of the agencies; and

19 (v) evaluate the adequacy of the as-
20 sessment procedures used by the depart-
21 ments and agencies to determine whether
22 the goals and objectives of programs are
23 being achieved, and identify the best prac-
24 tices identified from the evaluation for as-
25 sessment of program effectiveness; and

1 (C) monitor the implementation of the plan
 2 developed under subsection (c) and provide to
 3 the Director of the Office of Science and Tech-
 4 nology Policy its findings and recommendations
 5 for modifications to that plan.

6 (b) EXTERNAL REVIEW.—The Director of the Na-
 7 tional Science Foundation shall enter into an agreement
 8 with the National Research Council to conduct an inde-
 9 pendent review of programs as described in subsection
 10 (a)(3)(B) and to develop findings and recommendations.
 11 The findings and recommendations from the National Re-
 12 search Council review of programs shall be reported to the
 13 Director of the Office of Science and Technology Policy
 14 and to the Congress.

15 (c) EDUCATION PLAN.—

16 (1) PLAN CONTENTS.—On the basis of the find-
 17 ings of the review carried out in accordance with
 18 subsection (a)(3)(B) and taking into consideration
 19 the findings and recommendations of the National
 20 Research Council in accordance with subsection (b),
 21 the Director of the Office of Science and Technology
 22 Policy shall prepare a plan for Federal elementary
 23 and secondary science and mathematics education
 24 programs which shall include—

1 (A) a strategy to increase the effectiveness
2 of Federal programs to assist the efforts of
3 State and local school systems to implement
4 standards-based reform of elementary and sec-
5 ondary science and mathematics education;

6 (B) a coordinated approach for identifying
7 best practices for the use of computers and re-
8 lated information technologies in classroom in-
9 struction;

10 (C) the recommended balance for Federal
11 resource allocation among the major types of
12 activities supported, including projected funding
13 allocations for each major activity broken out
14 by department and agency;

15 (D) identification of effective Federal pro-
16 grams that have made measurable contributions
17 to achieving standards-based science and math-
18 ematics education reform;

19 (E) recommendations to the departments
20 and agencies for actions needed to increase uni-
21 formity across the Federal Government for ap-
22 plication procedures and requirements for grant
23 awards for support of elementary and secondary
24 science and mathematics education; and

1 (F) dissemination procedures for repli-
 2 eating results from effective programs, particu-
 3 larly best practices for classroom instruction.

4 (2) CONSULTATION.—The Director shall con-
 5 sult with academic, State, industry, and other appro-
 6 priate entities engaged in efforts to reform science
 7 and mathematics education as necessary and appro-
 8 priate for preparing the plan under paragraph (1).

9 (d) REPORTS.—

10 (1) INITIAL REPORT.—The Director of the Of-
 11 fice of Science and Technology Policy shall submit
 12 to the Congress, not later than 1 year after the date
 13 of the enactment of this Act, a report which—

14 (A) includes the plan described in sub-
 15 section (c)(1);

16 (B) in accordance with subsection
 17 (c)(1)(C), describes, for each department and
 18 agency represented on the committee estab-
 19 lished under subsection (a)(1), appropriate lev-
 20 els of Federal funding;

21 (C) includes the catalog prepared under
 22 subsection (a)(3)(A);

23 (D) includes the findings from the review
 24 required under subsection (a)(3)(B)(iii);

1 (E) includes the findings and recommenda-
 2 tions of the National Research Council devel-
 3 oped under subsection (b); and

4 (F) describes the procedures used by each
 5 department and agency represented on the com-
 6 mittee to assess the effectiveness of its edu-
 7 cation programs.

8 (2) ANNUAL UPDATES.—The Director of the
 9 Office of Science and Technology Policy shall submit
 10 to the Congress an annual update, at the time of the
 11 President’s annual budget request, of the report sub-
 12 mitted under paragraph (1), which shall include, for
 13 each department and agency represented on the
 14 committee, appropriate levels of Federal funding for
 15 the fiscal year during which the report is submitted
 16 and the levels proposed for the fiscal year with re-
 17 spect to which the budget submission applies.

18 **SEC. 209. DEFINITIONS.**

19 In this title:

20 (1) INSTITUTION OF HIGHER EDUCATION.—The
 21 term “institution of higher education” has the
 22 meaning given that term by section 101 of the High-
 23 er Education Act of 1965 (20 U.S.C. 1001).

24 (2) LOCAL AND STATE EDUCATIONAL AGEN-
 25 CY.—The terms “local educational agency” and

1 “State educational agency” have the meanings given
 2 such terms in section 14101 of the Elementary and
 3 Secondary Education Act of 1965 (20 U.S.C. 8801).

4 **TITLE III—OTHER PROVISIONS**

5 **SEC. 301. WORK-STUDY AMENDMENTS.**

6 (a) TECHNOLOGY TRAINING TREATED AS COMMU-
 7 NITY SERVICE.—Section 441(c) of the Higher Education
 8 Act of 1965 (20 U.S.C. 2751(c)) is amended—

9 (1) in paragraph (1), by inserting “technology
 10 training,” after “literacy training,”; and

11 (2) in paragraph (4)(A), by inserting before the
 12 semicolon at the end the following: “, including tu-
 13 toring teachers in the uses of classroom technology”.

14 (b) ADDITIONAL SPENDING FOR TECHNOLOGY
 15 TRAINING.—Section 443(b)(2)(B) of the Higher Edu-
 16 cation Act of 1965 (20 U.S.C. 2753(b)(2)(B)) is
 17 amended—

18 (1) by striking “7 percent” and inserting “10
 19 percent”;

20 (2) by inserting “(i)” after “shall ensure that”;
 21 and

22 (3) by inserting after “requirement of this sub-
 23 paragraph” the following: “, and (ii) at least 3 per-
 24 cent of the total amount of funds granted to such
 25 institution under this section for such fiscal year is

1 used to compensate students employed in technology
2 training or tutoring teachers in the uses of class-
3 room technology (or both),”.

4 **SEC. 302. STUDY.**

5 The Secretary of Commerce, in consultation with
6 other Government agencies, appropriate organizations,
7 and private businesses and corporations, shall conduct a
8 study of—

9 (1) the feasibility and effectiveness of various
10 incentives, including tax credits, for corporations
11 and businesses to provide—

12 (A) personnel with regular compensation
13 for time spent as volunteers engaged in the
14 technological training of teachers; and

15 (B) facilities for the provision of such
16 training of teachers;

17 (2) alternative methods of providing financial
18 support, through income tax credits, loan forgive-
19 ness, or otherwise, to individuals seeking training or
20 retraining in engineering, science, technology and
21 mathematics education;

22 (3) the effectiveness of colleges and universities
23 in training teachers who are able to use technology
24 and able to integrate technology into lesson plans
25 and curricula, including distance learning;

1 (4) methods to coordinate a working alliance at
2 various levels of government between the business
3 and academic community; and

4 (5) additional means of improving the efficiency
5 of the technological training of teachers.

6 **SEC. 303. REPORT TO CONGRESS.**

7 Not later than one year after the date of the enact-
8 ment of this Act, the Secretary of Commerce shall trans-
9 mit to the Congress a report outlining the results of the
10 study conducted under section 302. Such report shall in-
11 clude proposals for a comprehensive approach to providing
12 technologically competent teachers to our Nation's schools.
13 With respect to any objectives described in paragraphs (1)
14 through (5) of section 302 that the Secretary determines
15 are feasible and effective, such report shall include a plan
16 for accomplishing such objectives.

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